

Expressing prime factors using exponents

Grade 6 Factoring Worksheet

Write each number as a product of prime factors. Then write the answer using exponents.

Number	Prime factorization	Exponent form
1) 288		
2) 360		
3) 392		
4) 420		
5) 441		
6) 462		
7) 476		
8) 490		
9) 525		
10) 560		
11) 585		
12) 616		

Answers

Number	Prime factorization	Exponent form
1) 288	$2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3$	$2^5 \times 3^2$
2) 360	$2 \times 2 \times 2 \times 3 \times 3 \times 5$	$2^3 \times 3^2 \times 5$
3) 392	$2 \times 2 \times 2 \times 7 \times 7$	$2^3 \times 7^2$
4) 420	$2 \times 2 \times 3 \times 5 \times 7$	$2^2 \times 3 \times 5 \times 7$
5) 441	$3 \times 3 \times 7 \times 7$	$3^2 \times 7^2$
6) 462	$2 \times 3 \times 7 \times 11$	$2 \times 3 \times 7 \times 11$
7) 476	$2 \times 2 \times 7 \times 17$	$2^2 \times 7 \times 17$
8) 490	$2 \times 5 \times 7 \times 7$	$2 \times 5 \times 7^2$
9) 525	$3 \times 5 \times 5 \times 7$	$3 \times 5^2 \times 7$
10) 560	$2 \times 2 \times 2 \times 2 \times 5 \times 7$	$2^4 \times 5 \times 7$
11) 585	$3 \times 3 \times 5 \times 13$	$3^2 \times 5 \times 13$
12) 616	$2 \times 2 \times 2 \times 7 \times 11$	$2^3 \times 7 \times 11$